

Remarks/Arguments:

This is a reply to the office action of September 26.

Claim 17 is amended to address the formal objections raised in the Office Action. In particular, we have replaced the wording "obtainable by" in claim 17 with "obtained by". Claim 30 has been canceled.

The only remaining issue under section 112 is claim 23, i.e., the term "degree of urethanization". In this respect, we respectfully submit that the skilled person knows the meaning of this commonly used phrase, which describes the amount of urethane groups present in the final polyurethane.

Polyurethane is obtained by reacting a polyisocyanate with, e.g., a polyol. During the reaction, urethane groups are generated within the polymer chain. The degree of urethanization is an indicator how many urethane groups are present in the final polymer chain. As a general rule, one can say that the more urethane groups are present in a polymer, the more rigid it is. Therefore, we would respectfully submit that claim 23 may be maintained as currently is (except a spelling has been corrected).

The obviousness rejections are addressed below.

As the examiner acknowledged at page 4, third paragraph of the office action, Blum does not teach that a mixture of diamines as chain terminating agent should be used. This is in our opinion an important difference between the teaching of Blum and of the present invention, but not the only difference.

The present invention produces a specific polyurethane resin, which is obtained only if one uses as starting materials aliphatic diisocyanates polyether polyols with an average

molecular weight of not more than 1500 g/mol, at least one diamine and in a second step providing a mixture of two specific diamines as a chain terminating agent. The first specific diamine is isophorone diamine. The second diamine is selected from a small Markush group specified in claim 17.

Only if all those specific starting materials are selected and caused to react with each other, will the beneficial polyurethane resin of the present invention be obtained.

While it is correct that Blum discloses at several isolated passages in a general way some of the starting materials of the present polyurethane resin, there is no teaching in Blum to use the specific combination of all the above-mentioned starting materials. For example, even if Blum discloses the use of aliphatic diisocyanates, he never discloses or suggests the use of those aliphatic diisocyanates in combination with a low molecular weight polyol and a specific mixture of diamines. The skilled person would have to conduct feature picking in Blum in order to arrive at the specific combination of starting materials recited in present claim 17. More importantly, even if he did such impermissible feature picking, he would not arrive at the present invention, since Blum is absolutely silent with respect to the use of the specific mixture of diamines recited in claim 17, step b) of the present application.

This practice has also been admitted by the examiner, and consequently novelty was never in dispute. However, for the question of obviousness it must also be determined whether the skilled person would have had any motivation to modify the teaching of Blum in such a way as to arrive at the concept of the present invention. This motivation must be derivable from the prior art.

The skilled person would not have received any such motivation from the prior art. The examiner himself has acknowledged that Blum in isolation does not render obvious the subject matter of the present application. Blum is absolutely silent with

respect to the use of a specific mixture of diamines as suggested in claim 17 of the present application for chain termination.

Moreover, House (US 6,403,752) does not disclose or suggest the specific mixture of diamines recited in step b) of claim 17. Therefore, even if the skilled person combined Blum with House – which in our opinion he would not have done – he would not have arrived at the present invention. Rather, the question would still remain where the skilled person would have found the motivation to use the specific mixture of diamines for chain termination: Blum and House are silent in this respect.

Incidentally, we note also that House does not disclose or suggest the combination of starting materials used in the present invention, as defined above. Therefore, neither Blum nor House provide a motivation or teaching for the skilled person to use exactly the specific starting materials of the present invention for manufacturing a polyurethane resin.

The examiner appears to suggest that for a skilled person in the field of polyurethanes it would have been common routine to vary the starting materials in order to manufacture new polyurethane resins. However, this is not so. House himself discloses in column 1, lines 23-25 that polyurethanes have an enormous diversity of properties resulting from a relatively limited number of reactants. In other words, the characteristics of a polyurethane resins crucially depend upon the exact starting materials selected for manufacturing that polyurethane resin. It is well known to a skilled person that one cannot readily assess the characteristics of a novel polyurethane resin unless it has been manufactured.

In the case of the present invention, the goal of the inventors was to make a polyurethane resin which could be used as a binder in white inks. It is not a trivial task to predict from the choice of starting materials whether the final polyurethane resin will

indeed have the characteristics which are necessary for binders in white inks. There are, of course, polyurethane resins in the art which are not suitable at all for ink formulations. It was therefore not *prima facie* obvious that the novel polyurethane resin of the present invention would be suitable for ink preparation, let alone for the preparation of white inks.

In order to be suitable for white inks, a resin must possess certain characteristics. In particular, it must not cause yellowing of the ink layer since that would destroy the color effect of the ink. Also, of course, the polyurethane resin acting as a binder in a white ink must provide the ink with sufficient bond strength in order to be suitable for printing ink applications.

The present inventors discovered that both avoidance of yellowing of the ink layer as well as improved bond strength can be obtained with the specifically devised polyurethane resin of the present invention.

Finally, with respect to patent US 6,642,343 we note that, here also, a completely different polyol is used, i.e., a polyol having a molecular weight above 10000 g/mol as a required component. In consequence, the polyurethane resins of the '343 patent are clearly different from the polyurethane resins of the present application. There is no suggestion whatsoever in the patent to modify the polyurethane resins in a way as to arrive at the present invention in order to obtain binder resins which are suitable for white inks.

For the above reasons, we believe the claims now presented are patentable over the prior art of record, and that this application is in proper form for allowance.

Respectfully submitted,

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